June 2009 Climate Summary for Southwest Lower Michigan

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Overview

The month of June presented a variety of weather extremes to Southwest Lower Michigan. Much of the first half of the month was cooler than normal, with only a few exceptions. Cold fronts that passed through the region on the 1st and the 6th ensured the cool pattern would remain dominant for much of the first two weeks of June. One of the coolest days of the month was on the 2nd, when highs failed to get out of the low 60s.

The first severe weather event for the month occurred on the 8th. A supercell thunderstorm developed and moved into the greater Lansing area, producing numerous hail reports, including half dollar size hail in Holt and golf ball size hail near Williamston. Several other quarter size hail reports were noted across south central Michigan with this storm. Another strong cell developed in Gratiot County, and it took down a few trees. The last convective action for the day came in later in the evening in the form of a bow echo that took down several trees in Allegan and Van Buren counties upon its arrival along the coast and subsequent journey eastward. A fairly strong cold front followed this event and highs dropped back down into the mid 60s on the 11th. A gradual moderation in temperatures followed for several days, but the abnormal 60s returned once again as a stationary boundary stayed south of the state on the 17th and a good soaking rain provided some locations with over an inch of rain, including Lansing and Muskegon.

The most significant event of the month occurred on the 19th, when showers and thunderstorms erupted during the early morning hours, bringing flash flooding to Ottawa and Allegan counties. Some trees and power lines came down with the strong winds associated with these storms. More heavy rain, flash flooding, and wind damage returned to the area with a second round of strong to severe thunderstorms later at night on the 19th. Torrential rain brought storm total rainfall of 3 to 8 inches across portions of West Michigan. This led to road washouts, road closures, and flooding of buildings and homes especially across portions of Ottawa, Allegan, Kent, and Barry counties. The heavy rain also caused rises on area rivers and streams, leading to some local flooding issues. A National Weather Service storm survey after this event revealed three tornadoes touched down with these thunderstorms. These tornadoes were not associated with supercells, and as a result of this spun up and dissipated quickly. One EF1 and two EF2 tornadoes were confirmed. Some roof damage to homes and other structural damage occurred as a result of these tornadoes. The damage swaths were quite small, especially when compared to a more substantial and more destructive EF2 tornado that affected Williamston in October of 2007.

Summer warmth and dry conditions finally arrived after this event. Highs progressively warmed well into the 80s and even the 90s in most locations. The warmest day was the 24th when temperatures soared into the low and mid 90s. A few locations across central Michigan even reached the upper 90s. Grand Rapids tied its all time June 24 record at 96 degrees. Kalamazoo also hit 96, while National Weather Service Cooperative Observers in Baldwin and Hart recorded highs of 97 and 98, respectively.

The last few days of the month trended progressively cooler as the upper level pattern began to change. High temperatures were confined to the 60s on the 30th, which was some 15 degrees below average. Therefore, the month began and ended on a cool note while thunderstorms, tornadoes, flooding, heat, and humidity were found in between.

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TABLE 1. Reported temperature and precipitation for June 2009 at selected climate stations in Southwest Lower Michigan. Normals are computed from 30-year averages from 1971-2000.

Location		Temperature (degrees F)	Precipitation (inches)	Snowfall (inches)
Grand Rapids	*Reported*	67.6	6.17	0.0
	Normal	67.1	3.67	0.0
	Departure	+0.5	+2.50	0.0
Lansing	*Reported*	66.1	4.45	0.0
	Normal	66.2	3.60	0.0
	Departure	-0.1	+0.85	0.0
Muskegon	*Reported*	66.0	2.86	0.0
	Normal	64.9	2.58	0.0
	Departure	+1.1	+0.28	0.0

June 2009 Climate Summary for Southwest Lower Michigan

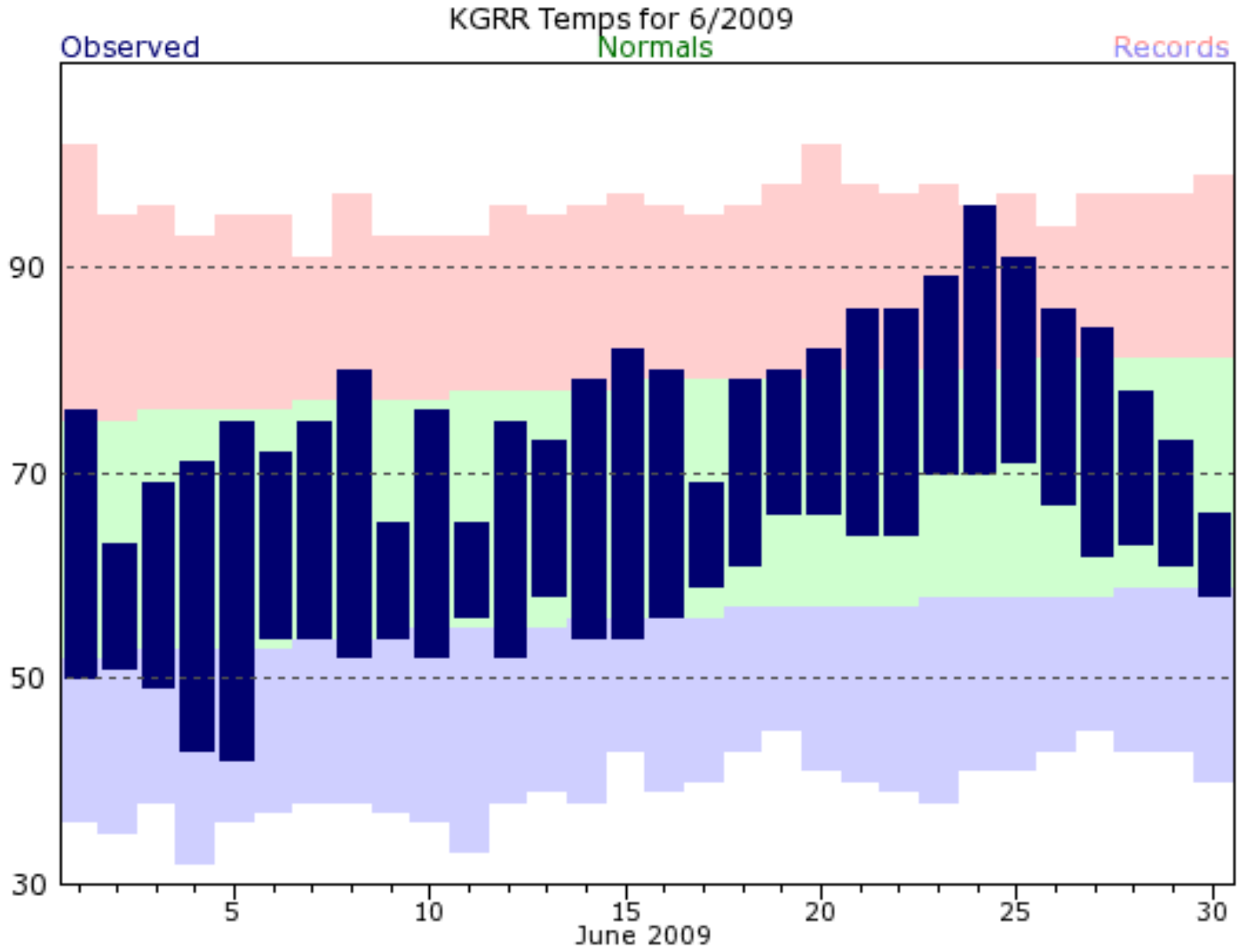

Figure 1. Observed temperatures at the Gerald R. Ford International Airport. Dark blue bars are the temperature range for each day. The green strip indicates the normal range of temperatures. Record high and low temperatures are indicated at the top of the pink area and the bottom of the blue area, respectively. Normals computed as in Table 1.

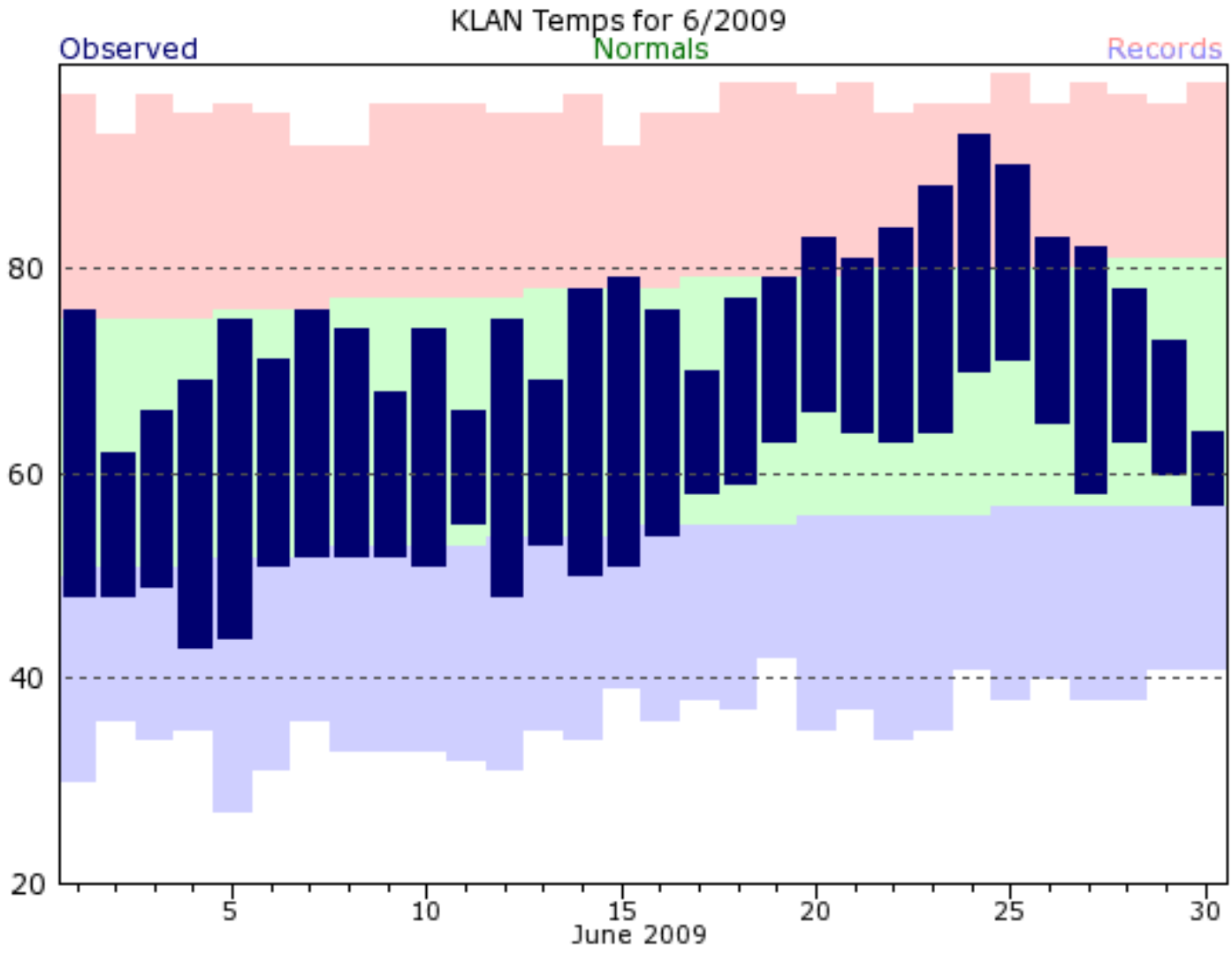

Figure 2. As in Figure. 1, except for the Lansing airport.

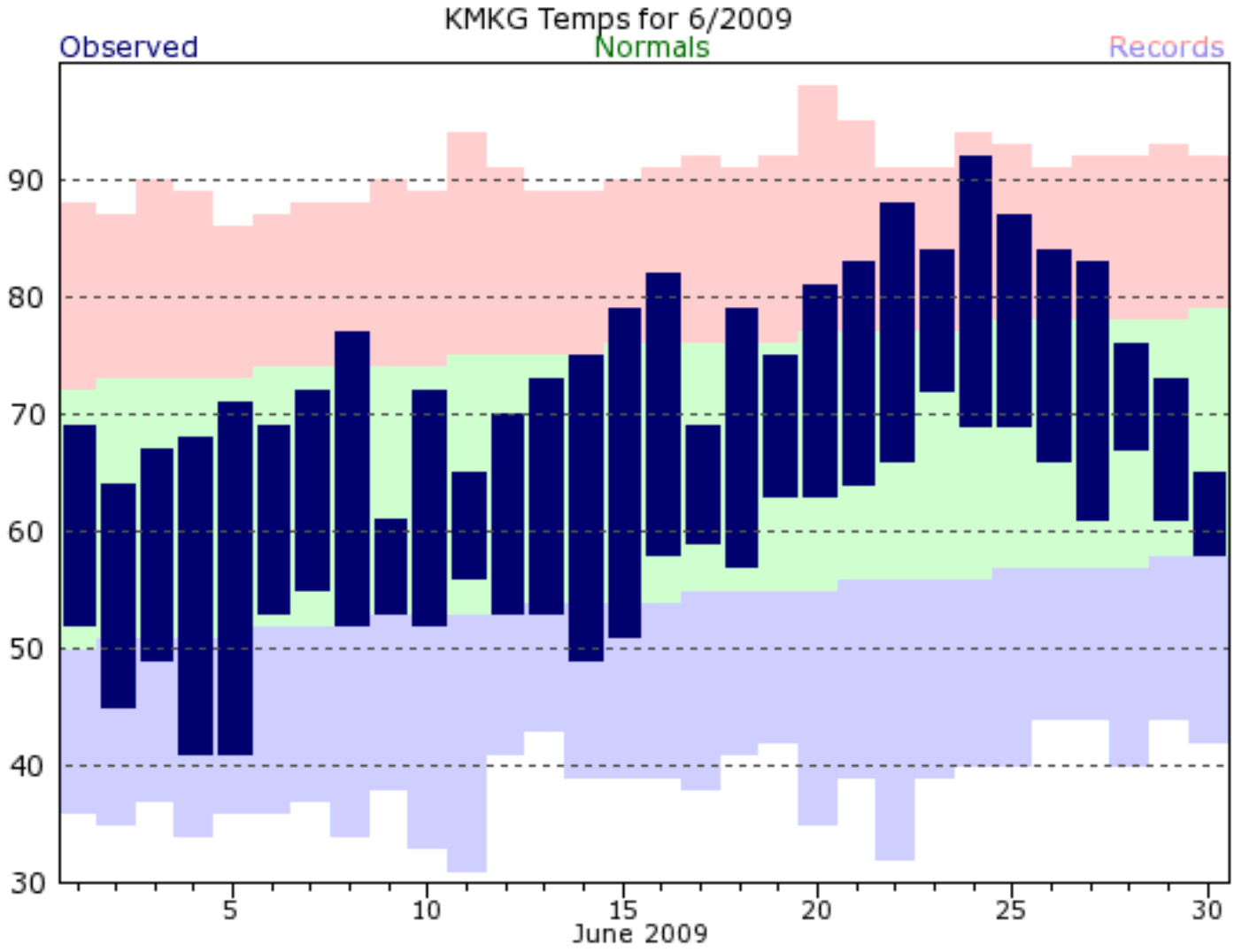

Figure 3. As in Figure. 1, except for the Muskegon airport.

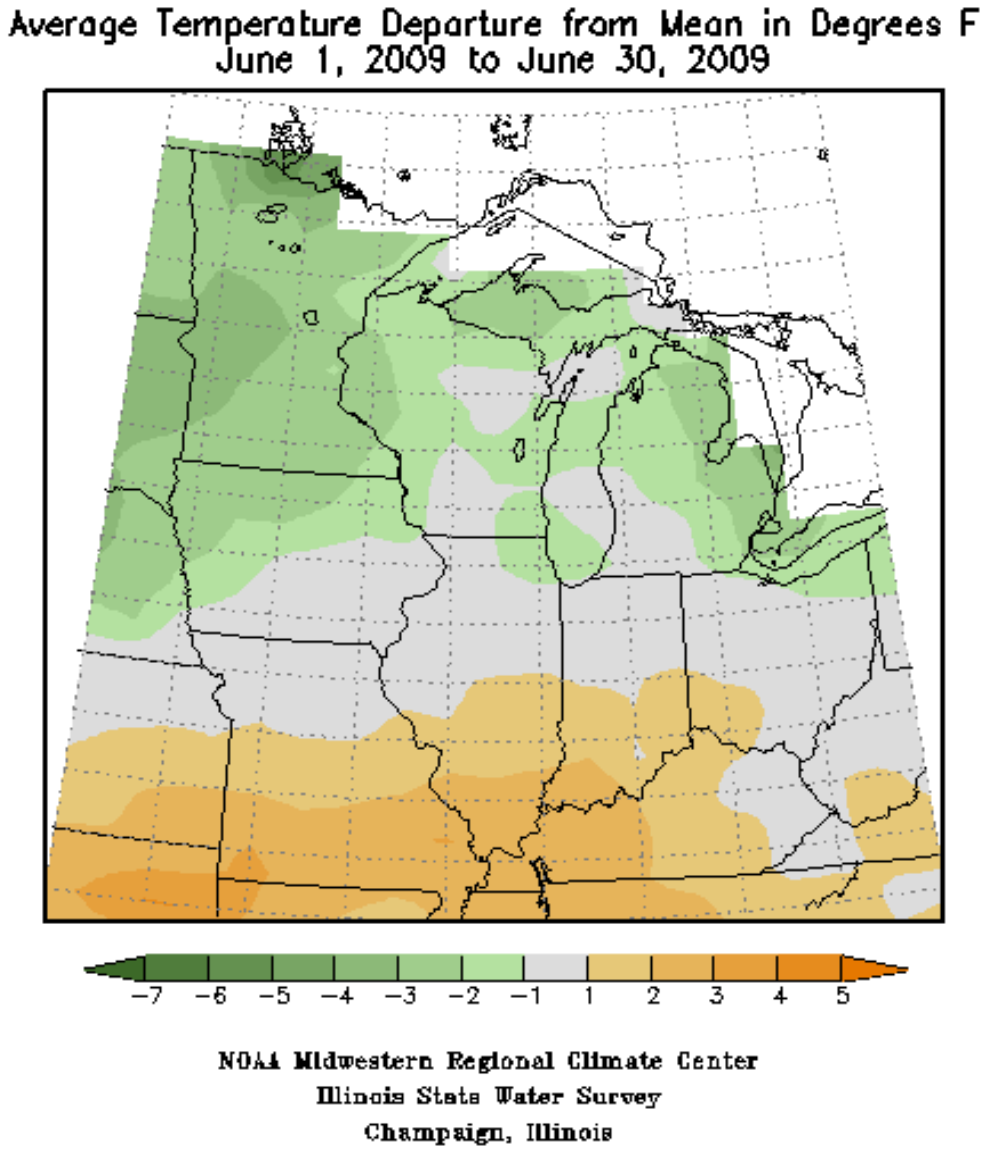

Figure 4. Average temperature departure (degrees F) for June of 2009.

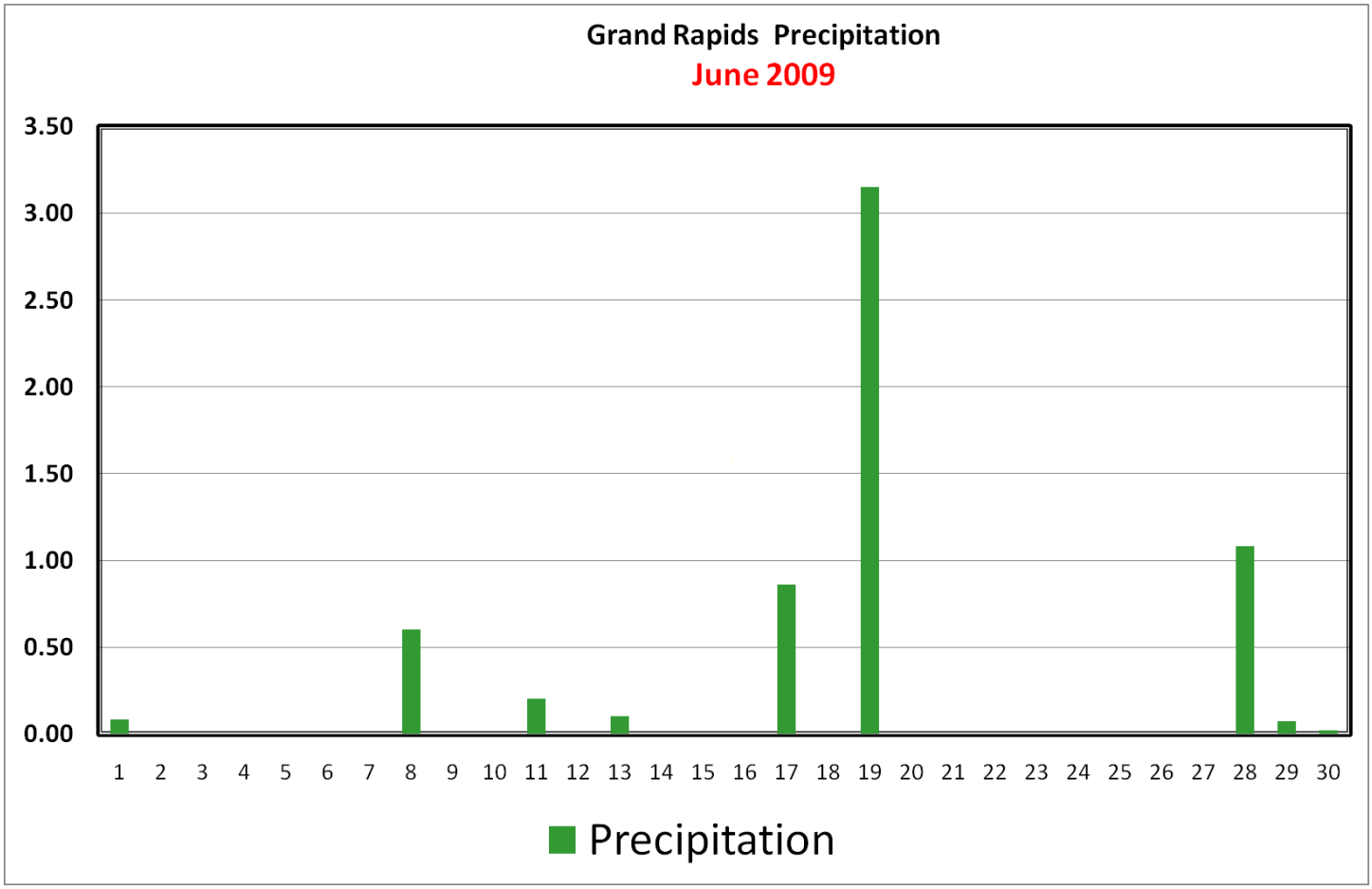

Figure 5. Daily precipitation in inches for June of 2009 at the Gerald R. Ford International Airport.

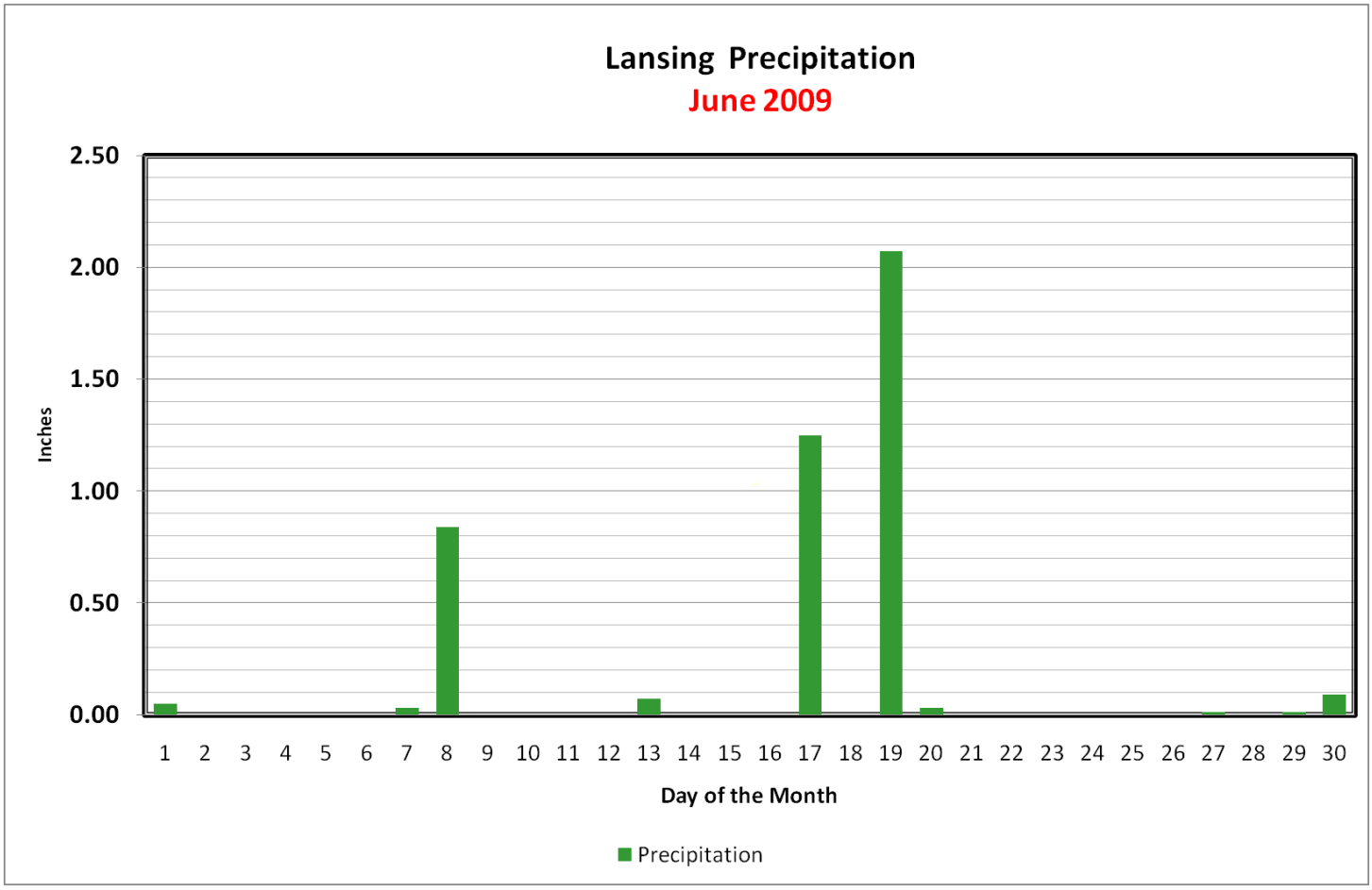

Figure 6. As in Figure 5, except for the Lansing Capital City Airport.

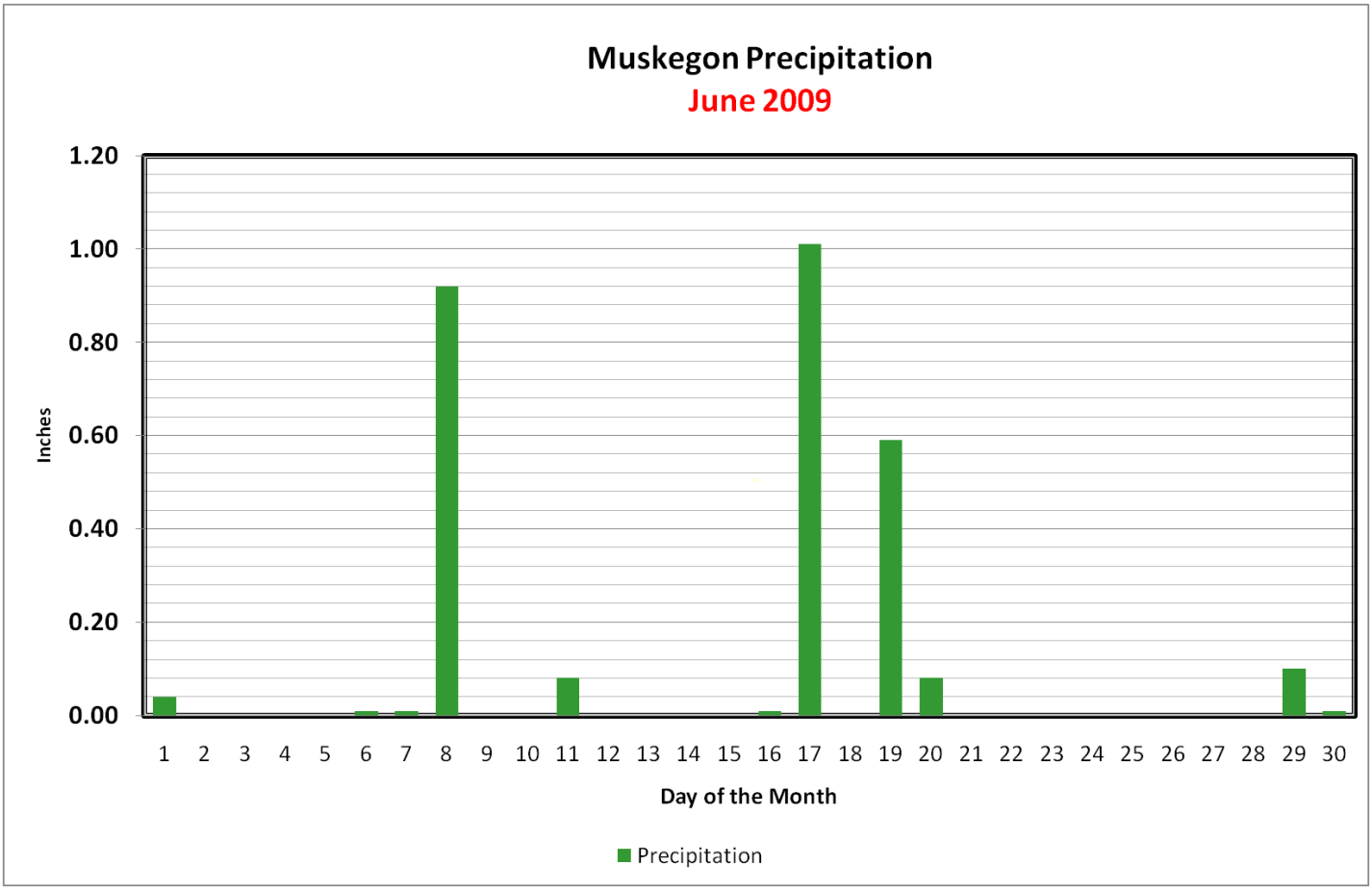

Figure 7. As in Figure 5, except for the Muskegon County Airport.

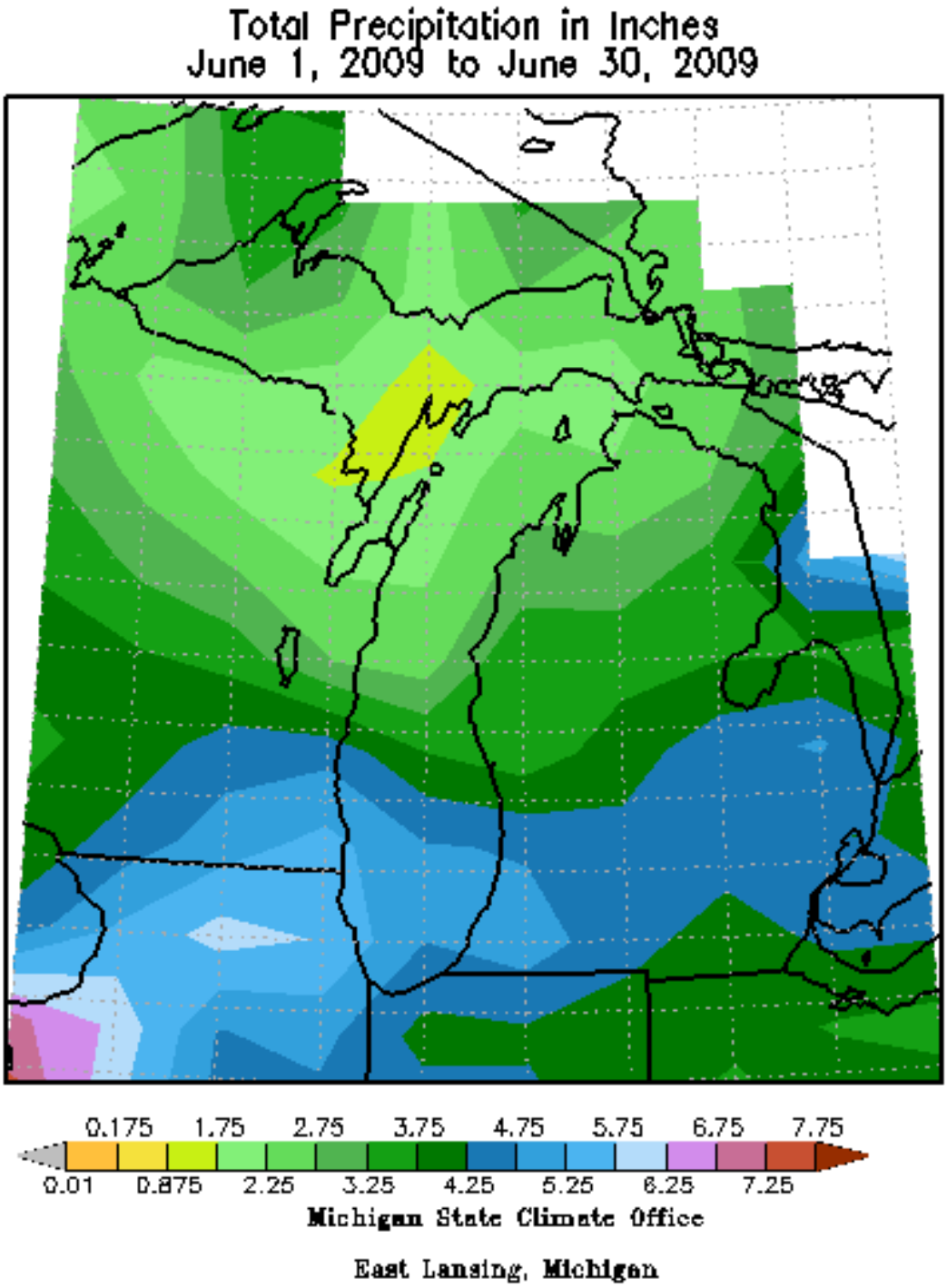

Figure 8 (a): Total precipitation in inches for June 2009

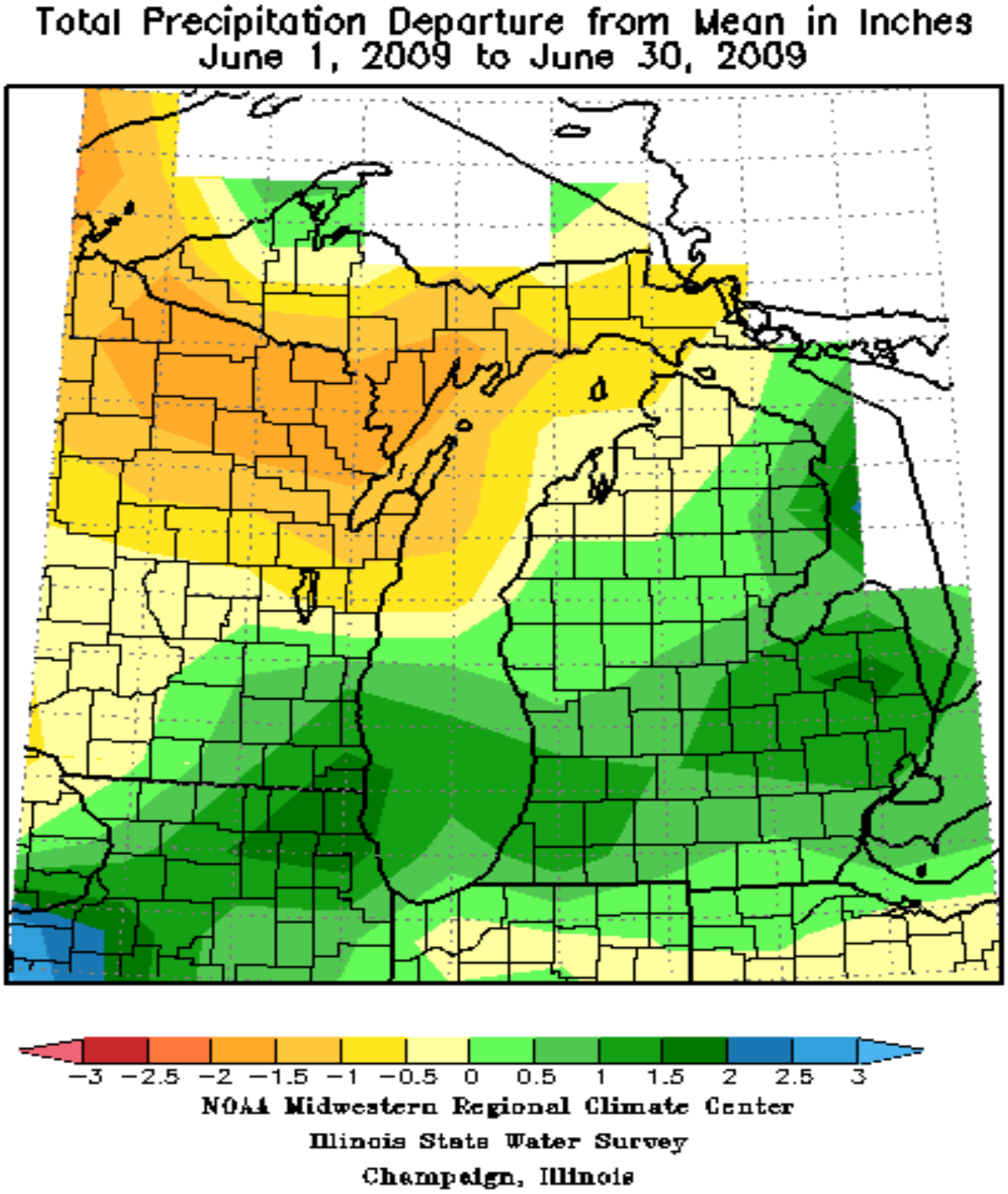

Figure 8. (b) Total precipitation departure from the mean.

June 2009 Climate Summary for Southwest Lower Michigan

Highlights of the month

8th: Some severe thunderstorms broke out across the region during the mid to late afternoon hours, bringing large hail and a few damaging wind gusts to the area. A strong hailstorm affected the greater Lansing area (Figure 9), producing several reports of quarter to even golf ball size hail. A marginal bow echo came onshore during the evening hours (Figure 10), taking down some trees in Allegan and Van Buren counties.

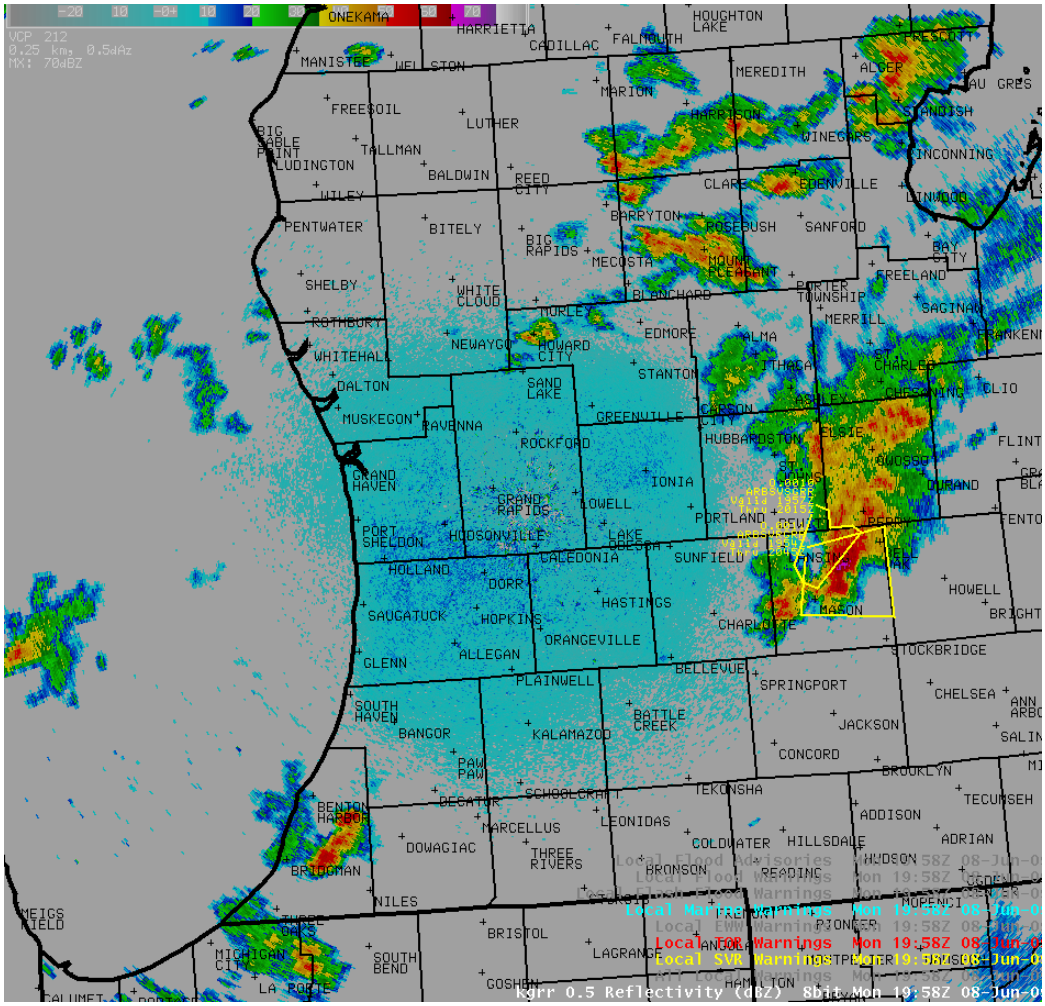

Figure 9. Radar imagery from 4pm on June 8

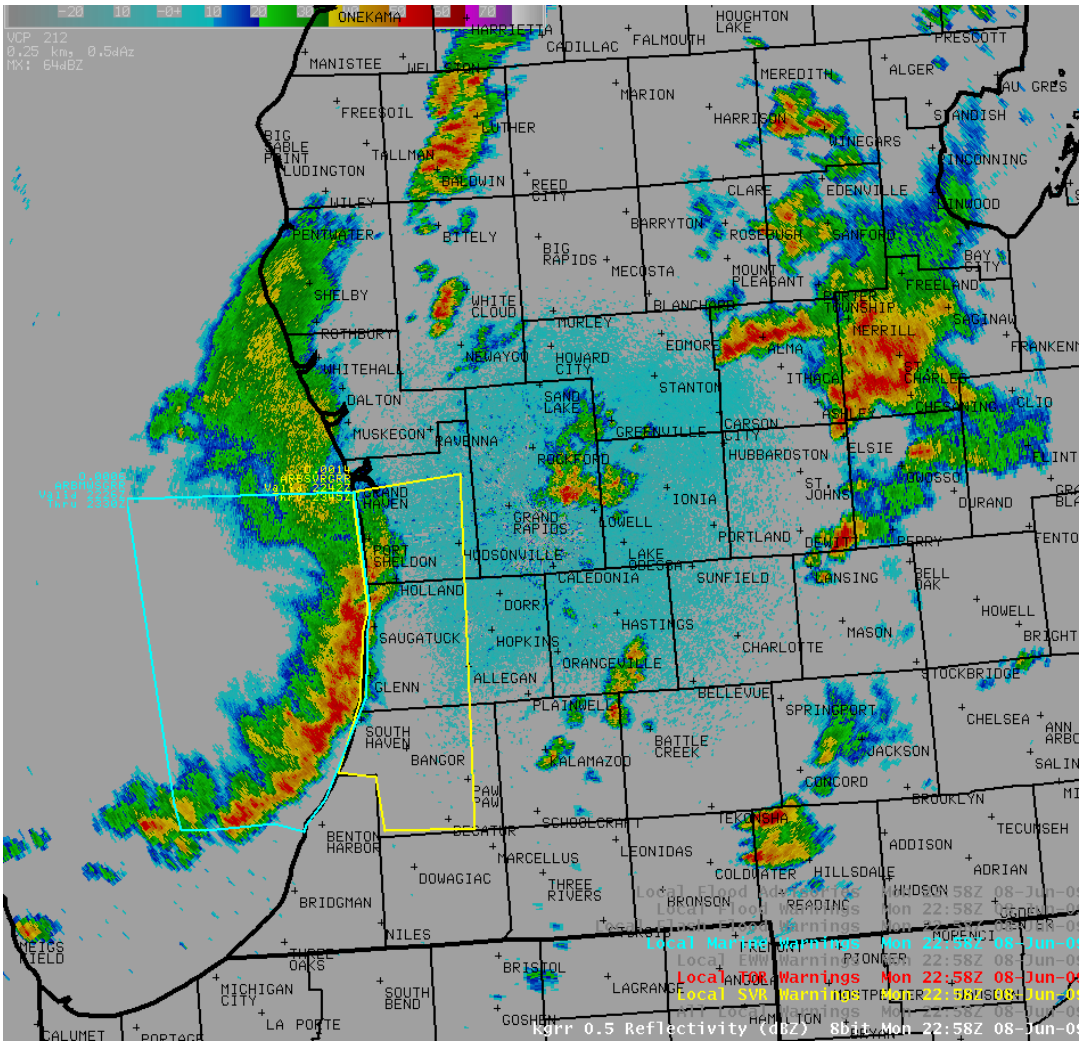

Figure 10. Radar imagery from 7pm on June 8

19th: A significant flooding situation plagued areas of West Michigan, particularly locations from just east of Grand Rapids to the lakeshore where a ribbon of 3 to 8 inches of rain fell from early in the morning on the 19th through late at night (Fig. 11). This was the second June in a row for serious flash flooding in the city of Holland as well as other cities across southern Ottawa, southern Kent, and northern Allegan counties. The heavy rain produced rapid river and stream rises as well. Strong to severe thunderstorms accounted for three tornadoes that produced localized structural damage to some homes. One EF1 and two EF2 tornadoes touched down.

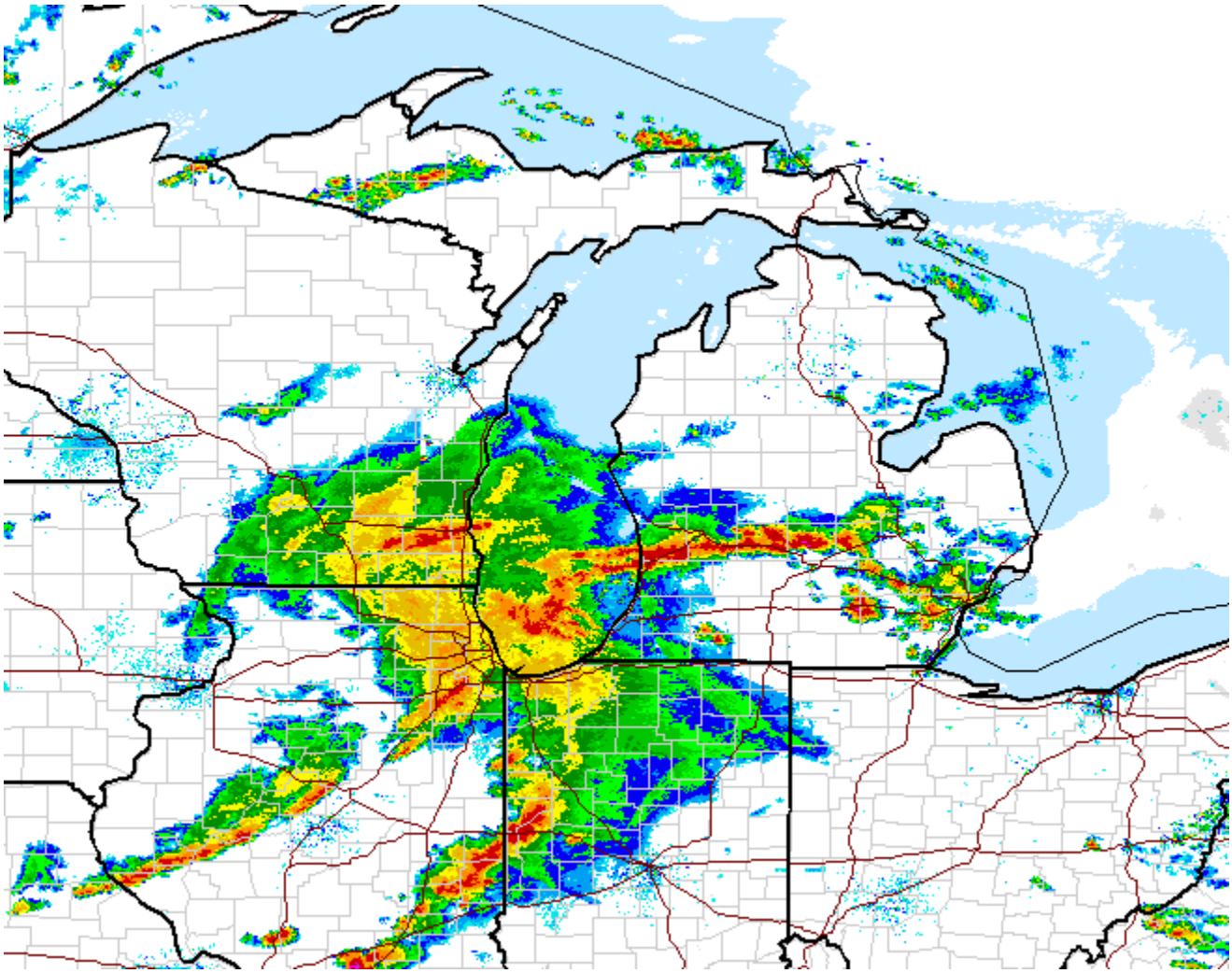

Figure 11. The band of heavy rain that intensified the flooding situation across West Michigan is clearly seen on this radar image from 9 PM on June 19. The heavy rain extended across Lake Michigan and into the Chicago metro area, only worsening the situation in the Holland and Grand Rapids areas where a total of 3 to 8 inches of rain fell.

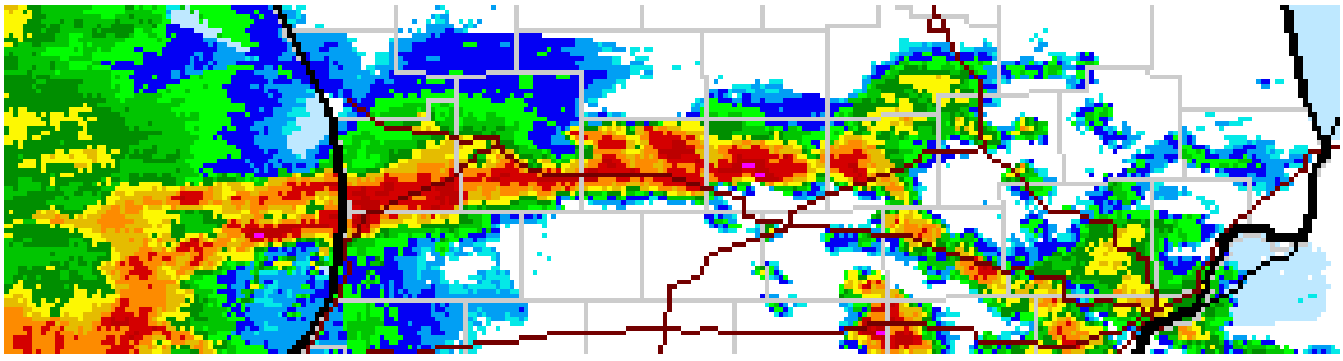

FIG.12. A zoomed-in view of the same radar image.

24th: The hottest day so far in 2009 sent temperatures soaring into the 90s across the state, with the highest readings being away from the cooling influence of Lake Michigan. The mercury continued to hover around 90 or better on the 25th before dropping considerably by the end of the month.

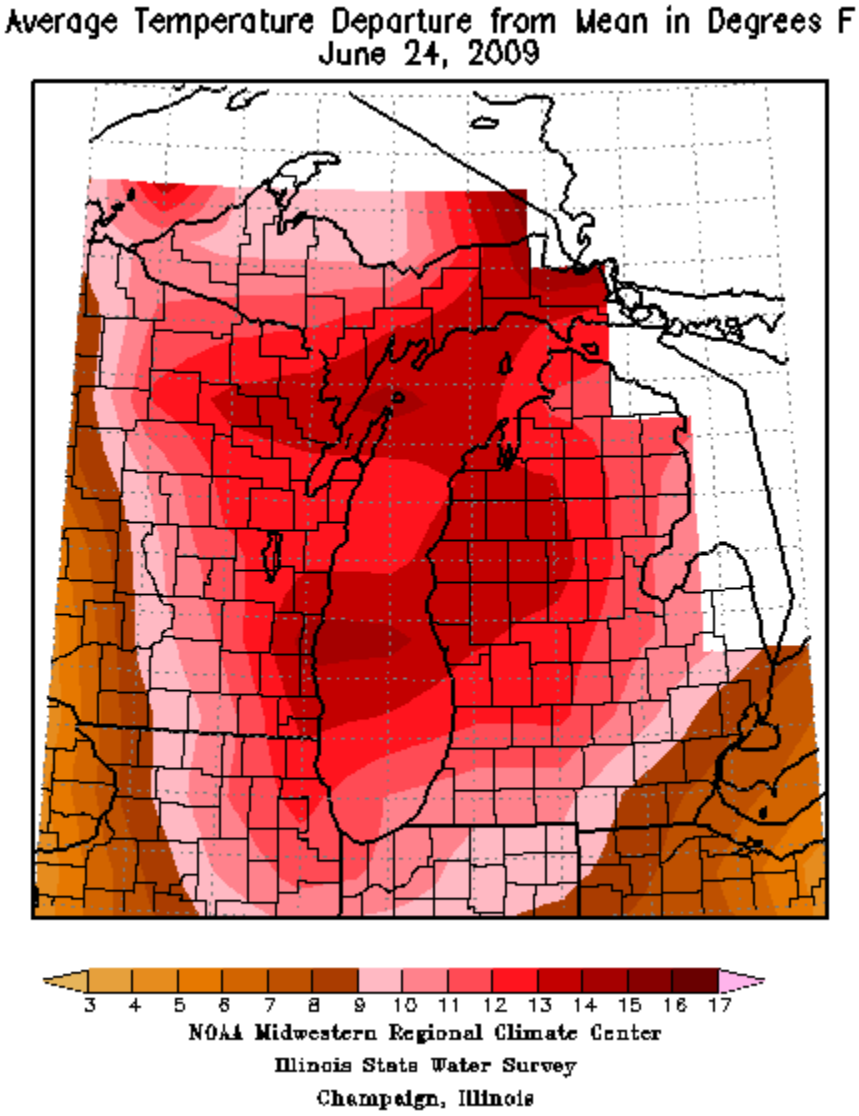

Figure 12. The average temperature on the 24th ranged from 10 to 15 degrees above the mean across all of Southwest Michigan.